

REMARKS

Claims 12-16, 22-27 and 34-74 are currently pending. The Examiner has allowed 12-16, 22-27 and 47-58. In addition, the Examiner has indicated that claims 68 and 69 recite allowable subject matter.

In the Office Action, the Examiner requested a corrected Terminal Disclaimer to correct an obvious typographical error. Submitted together herewith is a corrected Terminal Disclaimer that replaces the one previously submitted on April 11, 2002 which should be deemed withdrawn.

The Examiner rejected claims 34, 42-46, 59-64, 66, 67, 70, 71, 73 and 74 under 35 USC 103(a) as being unpatentable over Pippin, U.S. Patent No. 5,838,578, in view of Neal et al., U.S. Patent No. 5,483,102, and rejected claims 35-41, 65 and 72 under 35 USC 103(a) as being unpatentable over Pippin in view of Neal et al. and Ko, U.S. Patent No. 5,457,766. Applicants respectfully disagree.

Claim 34 pertains to a method for providing thermal management for a computer. The method of claim 34 recites:

monitoring temperature of the processor;
activating a cooling fan when the temperature of the processor indicates that primary thermal management is required; and
subsequently reducing operational clock frequency of the processor when the temperature of the processor indicates that supplemental thermal management is required even after the cooling fan has been activated.

The Examiner admits that Pippin does not teach "reduction of the clock frequency when supplemental thermal management is required even after the cooling fan has been activated" (Final Office Action, p. 3). However, the Examiner relies on Neal et.al. to make up this deficiency. In Neal et al. the fan element 48 is always (unless failing) operating to cool the processor 24 through the heatsink element 47. Hence, the fan element 48 is NOT activated "when the temperature of the processor indicates that primary thermal management is required" as is recited in claim 34. Consequently, the

approach of Neal et al. is disadvantageous in that not only is energy (power) unnecessarily consumed but also cooling noise is unnecessarily produced by powering/operating the fan element 48 when not needed (i.e., when the thermal conditions are such that cooling via a fan is not needed). If the fan element 48 of Neal et al. fails, then the clocking frequency for the processor 24 is lowered. The state machine shown in Fig. 12 of Neal et al. depicts such operation. See Neal et al., col. 7, line 50 to col. 8, line 11. Accordingly, it is submitted that claim 34 is patentably distinct from Pippin alone or in combination with Neal et al..

Claim 59 also pertains to a method for providing thermal management for a computer. The method of claim 59 recites:

monitoring temperature of the processor;
comparing the temperature of the processor with at least a first temperature threshold and a second predetermined temperature, the second predetermined temperature corresponding to a greater temperature than the first predetermined temperature;
activating a cooling fan when the temperature of the processor exceeds the first predetermined temperature; and
reducing operational clock frequency of the processor when the temperature of the processor exceeds the second predetermined temperature,
wherein the cooling fan provides primary thermal management and reduction in the operational clock frequency of the processor provides secondary thermal management.

Again, in Neal et al. the fan element 48 is always normally operating to cool the processor 24 through the heatsink element 47. Hence, the fan element 48 is NOT activated "when the temperature of the processor exceeds the first predetermined temperature" as is recited in claim 59. Nor is there any teaching or suggestion for use of first and second predetermined temperatures as recited in claim 59. Accordingly, it is submitted that claim 59 is patentably distinct from Pippin alone or in combination with Neal et al..

Claim 63 pertains to a computer that includes a thermal manager that "activates said fan when the temperature indication [from said temperature

sensor] indicates that primary thermal management is required." Hence, it is submitted that claim 63 is patentable distinct from Pippin alone or in combination with Neal et al. for at least similar reasons as provided for claim 34.

Based on the foregoing, it is submitted that claims 34, 59 and 63 are patentably distinct from Pippin alone or in combination with Neal et al. In addition, it is submitted that dependent claims 42-46, 60-64, 66, 67, 70, 71, 73 and 74 are also patentably distinct for at least the same reasons. The additional limitations recited in the independent claims or the dependent claims are not further discussed as the above discussed limitations are clearly sufficient to distinguish the claimed invention from Pippin and Neal et al.

Further, dependent claims 35-41, 65 and 72 were rejected as being unpatentable over Pippin in view of Neal et al. and Ko. Ko is not able to overcome the above-identified deficiencies of Pippin and Neal et al. Ko is also not combinable with Pippin and Neal et al. Ko describes a ventilation fan for an electronic device (e.g., personal computer, electronic copier, laser printer and facsimile machine) in which the speed of the ventilation fan can vary with the internal temperature of the device. In contrast, claims 35, 37, 40 utilizes temperature of the processor. Ko does not teach or suggest use of processor temperature. The fan element 48 in Neal et al. is always on, whereas the ventilation fan of Ko can vary with the internal temperature of the device. These conflicting teachings confirm that those skilled in the art would not combine these references as the Examiner proposes.

Thus, it is respectfully requested that the Examiner withdraw the rejection of claims 34-46, 59-67 and 70-74 under 35 USC §103(a).

SUMMARY

It is submitted that claims 12-16, 22-27 and 34-74 are in condition for allowance. Accordingly, reconsideration of the application and an early Notice of Allowance are earnestly solicited. If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully

requested to contact the undersigned attorney at the telephone number listed below.

Charge any additional fees or credit any overpayment to Deposit Account No. 500388, (Order No. RLC1G000). Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such extension or any further fee required in connection with the filing of this Amendment is to be charged to Deposit Account No. 500388 (Order No. RLC1G000).

Respectfully submitted,



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